

**International Harmonized Research Activities - Intelligent Transport Systems  
Working Group Meeting  
June 19-20, Tällberg, Sweden**

**Minutes**

**Attendees:**

Dr. Ian Noy (Chairman, Transport Canada, Canada)  
Mr. Ruggero Ceci (Swedish National Road Administration, Sweden)  
Dr. med. B. Friedel (BASt, Germany)  
Mr. Kaneo Hiramatsu, (JARI, Japan)  
Mr. Geoff Harvey (DfT, UK)  
Dr. Annie Pauzié (INRETS, France)  
Mr. Kircher (SNRA, Sweden)

**1. Introductions**

- I. Noy thanked Mr. Ceci and SNRA for hosting the meeting

**2. Approval of Minutes**

The minutes of the previous meeting were approved, as corrected.

**3. Items Arising from the Minutes**

I. Noy to write to HLG-Safety (Heinz Hilbrecht informing Mr. Englebrecht) to introduce IHRA-ITS and suggest collaboration. I. Noy to request a status report on naturalistic Driving from NHTSA for next meeting.	Wrote Mr. Jaaskelainen Distributed by A. Burgett
C. Patten to investigate opportunities for and co-ordinate workshop on simulator reference test scenarios (e.g., NADS/Iowa, VTI/Linköping)	BF
K. Hiramatsu to check whether he can share plans and results of JARI research in the area of workload, driver adaptation and integration.	Distributed at meeting (Annex 1, 2, 3)
G. Harvey to draft a paper outlining the GRRF needs, present and future.	Completed
WG members to explore possibilities of sponsoring personnel exchanges as a form of collaboration under the IHRA umbrella (e.g., civil servants – industry – international – national).	BASt offer still open. INRETS has similar possibility. WG members encouraged to promote.
WG members to send suggestions of possible venues for introducing and/or presenting IHRA-ITS work (such as ITS World Congress, ITS America meeting).	IATS/Japan, ITS World

	Congress
I. Noy to write to GFP of Netherlands, Italy, Poland, Australia, Hungary concerning participation in WG	Netherlands will participate in future
WG members to consider inviting other partners to join the WG.	BF
I. Noy to contact Malcolm Fendick to arrange for GRRF agenda item (select day, etc.).	Presentation Completed
K. Hiramatsu will obtain additional information about Japanese naturalistic driving studies in simulator and field settings.	Completed
I. Noy to follow-up with EC Option 1 concerning ESoP	Discussions with EC pending
C Patten to send translated version of his Annex (3)	??
Dr. Friedel to draft a letter to formalize the tripartite cooperation on driver workload.	Completed
K. Hiramatsu to consider how JARI's research can be integrated in the matrix of common elements (see Annex 13).	Completed
A presentation of German-Swedish studies may be made at the next WG meeting.	Arranged
I. Noy to send survey questionnaire to GFP's for completion and submission to BAST. BAST to update database of current and recent research.	BF
Canadian research investigating the effects of violation of expectations will be shared with other members of the WG.	Completed
Information concerning EC projects RESPONSE II, concerned with safety, legal and other matters, will be shared, to the extent permissible.	Start of RESPONSE II pending

#### 4. Report of Chairman

- I. Noy reported on presentation to GRRF (PowerPoint file attached – Annex 4) need to sensitize GRs to driver-system interaction considerations (e.g., steer by wire)
- WP.29 formed Informal Group on ITS, lead Japan. First meeting June 26, Geneva (Agenda attached – Annex 5)
- Roundtable on ITS scheduled for February 2003 – need IHRA participation
- IHRA Steering Committee Report – ESV2003
- AAM Principles distributed for comment
- IHRA-ITS website updated: <http://199.79.179.92/ITS/ITS.html>

## **5. Project Reports**

### **5.1 Project 1: Development of a Harmonized Safety Evaluation Methodology Framework (Worldwide) LEAD: Augello, Pauzié**

Funding for national project (methodology identification and validation) is carried over to next year as a result of personnel issues.

Developing relevant proposals for EC FP6 for safety evaluation methodologies (identification and selection of appropriate methods from integrated toolkit). Project SECURE approval not yet secured.

Collaboration with PSA in mental workload evaluation continues (Driver Activity Load Index). Also interested in occlusion research. Work to date is proprietary.

Shift focus to influence EC FP6 (DG IST and Tren) projects and involve extra-European performers. I. Noy to propose to invite EC to develop joint paper (EC and IHRA) for ESV2003. DG IST – Andre Vits (or Valerie Moutal) A. Pauzie to send me coordinates. EC would articulate overview of EOI (expression of interests) and IHRA would emphasize need for harmonized focused research.

U.S. introduced general methodology developed for evaluations of systems such as ACC. CD provided outlines a variety of safety evaluation methodologies, including analytic approaches, that could be used in a harmonized approach.

eSafety conference in September (Lyon) is culmination of set of 5 working groups, initiated by EC (organized by ERTICO). I. Noy to contact D. Augello to clarify potential IHRA role.

### **5.2 Project 2: Driver Understanding and Expectation of ITS Systems: Identification and Measurement of The Effects of False Expectation of Driver Performance, LEAD: I. Noy**

Consideration now being given to incorporate this issue in research involving ACC, similar to previously-reported study of lane departure warning system. BAST considering examining the expectation issue in a study on ISA.

### **5.3 Project 3: Human Factors Principles Checklist For In-Vehicle Systems, LEAD: B. Friedel & C. Patten**

VTI have been assigned with the responsibility of developing a safety evaluation checklist for expert evaluators together with TRL in the UK as of 2002.

Other activities within this priority project research area have not been mapped.

### **5.4 Project 4: Normative Data On Naturalistic Driving Behavior, LEAD: A. Burgett**

The simplistic definition of naturalistic driving is: “Real people, driving real vehicles on real roads.” In practice, naturalistic driving experiments consist of volunteer drivers using instrumented vehicles in a non-scripted way on public roads, for the purpose of gathering data on driver and system (when included) performance. The USDOT has sponsored a variety of naturalistic driving experiments as

part of the Intelligent Vehicle Initiative of the Intelligent Transportation Systems program. There are four major categories of naturalistic driving projects:

1. Volunteers driving their own vehicles: with no additional safety-enhancing, or safety-impacting, systems; with no observers; but with substantial instrumentation added.
2. Volunteers driving their own vehicles: with additional safety-enhancing, or safety-impacting, systems; with no observers; but with substantial instrumentation added.
3. Volunteers driving project-owned vehicles: no additional safety-enhancing, or safety-impacting, systems; with observers/instructors present in the vehicle; substantial instrumentation added..
4. Volunteers driving project-owned vehicle: with additional safety-enhancing, or safety-impacting, systems; with no observers; but with substantial instrumentation added. This type of naturalistic driving is described as a field operational test (FOT).

A CD on Evaluation of the Intelligent Cruise Control System was distributed (for copies contact NHTSA)

Naturalistic driving research in Japan is described in Annex 2.

#### **5.5 Project 5: Simulator Reference Test Scenarios, LEAD: C. Patten**

The international project, 'HASTE' (Human Machine Interface And the Safety of Traffic in Europe), started in January of this year and is progressing nicely. HASTE does not address the simulator reference test scenarios description exactly, but is more a combination of the above mentioned priority project, and another IHRA-ITS priority project, namely 'Human factors principles checklists for in-vehicle systems'.

The planned workshop to discuss and map simulator reference scenarios and the needs for standardised scenario descriptions is currently not feasible due to lack of resources.

#### **5.6 Project 6: Improved Secondary Task Methodology For Evaluating Safety Effects of Driver Workload, LEAD: K. Hiramatsu**

Kircher presented results of the VTI study showing the promise of PDT as an index of driver workload (study examined traffic complexity and 2 different navigations systems). Preliminary results will be distributed to WG members. BAST research has produced very similar results (viewgraphs appended as Annex 6). The joint studies will be presented at ESV2003. I. Noy mentioned the Auto\_PC study (joint TC-NHTSA) now undergoing analysis that used eye movements and the PDT task. Paper will be submitted to Dr. Friedel for HMI session at ESV.

U.S.-based CAMP research was described. Objective is to develop correlations between laboratory measures of workload and test track data.

JARI research involving secondary task method was described (see Annex 7). Auditory arithmetic task used as secondary task. Study will be completed in 2003. It is anticipated that preliminary results will be presented at ESV.

### **5.7 Project 7: Harmonization and Validation Of Surrogate Safety Measures, *LEAD: A. Burgett***

NHTSA presented work that elaborates on the concept of surrogate measures such as range and range rate (see Annex 8, 9) as predictors of safety measures derived from simulator and other settings. Validated surrogate measure will give insight into how safety might be impacted by introduction of new technologies. The second paper (see Annex 9) described an analytic framework for assessing the adequacy of driver response in relations to crash prevention boundary. This work is intended to complement results of naturalistic driving studies.

Other WG members are invited to review/comment these papers and to add to this work with relevant national efforts. Application of these methods in other research needs to be explored.

## **6. National Reports**

### **6.1 Japan**

K. Hiramatsu described AHS Activities 2002-2003 (Annex 10, 11), including test areas, service items and test sites. JAMA Guidelines (Feb 22, 2000) were provided (Annex 12).

### **6.2 France**

A complete report is contained in Annex 13. The highlights are described below.

#### National projects

##### ***PREDIT 3 Program***

Funded by the ministry of transport, the ministry of research, the ministry of industry and the ministry of environment, the ***PREDIT 3*** program, in the continuation of the two previous ones, is an approach of the transport including transport management, taking into account increase in traffic and modification due to Europe exchanges, transport safety issues and environmental issues with pollution problems. The principle is to make working together research laboratories, industrials and services companies with the support of the Public Authorities.

##### ***ARCOS Project (2002-2004)***

Project gathering 53 French partners from various disciplines (engineers, industrials, academic researchers specialised in telecommunication, technological engineering, ergonomics, economy, sociology,...) in order to set up 4 assistance functions in 3 chronological targets more and more advanced, the target n°1 ending in 2004.

The 4 functions are :

- Prevention of collision with obstacles
- Prevention of dangerous headways / traffic, speed, meteo
- Prevention of lane departure

- Prevention of secondary accident by means of V-V communication

### ***Investigation about portable or “nomad” systems***

Technological lookout of portable systems (2002-2003)

To investigate the various types of transport services displayed on portable and “nomad” systems (mobile phone, Pocket PC, PDA), to define precisely the proposed functions that are available on the market and to evaluate their HMI ergonomics in terms of mode of dialogue (tactile screen, vocal recognition), size and specificity of the screen (textual information, pictograms). The final objective is a better knowledge of the “nomad” characteristics and their potential consequences of use while driving according to their ergonomics.

### ***Investigation about European Statements of principle***

French department of Transport Ministry is waiting for the EC feedback.

French surveys about Statements of Principles continue in 2002-2003 in order to extend the panels of interviewees, and more specifically in the area of professional users (emergency vehicle, express delivery, taxi,...) in order to better understand this specific context, and how SoP can apply or not to the various cases according to the encountered constraints.

### **EUROPEAN Projects**

- EU 5th FRAMEWORK PROGRAMME (1998-2002) and the follow up

ISA : LAVIA project controlling speed of vehicle according to regulation.

- EU 6th FRAMEWORK PROGRAMME

### **Network of Excellence**

In April 1991, the European Commission's Information Technology Research Programme ([ESPRIT](#)), established three pilot **Networks of Excellence** within the 4th Framework Programme. These are Europe-wide communities working in key areas of IT research. Each Network consists of several nodes. The nodes can be research centres, academic departments or industrial laboratories. A Network can be seen as a distributed facility with a Europe-wide base. Access to one Network node should give access to the resources and expertise of all nodes. ESPRIT funding enabled members of a Network to establish the administrative and information infrastructure of a research community. It also allows members to organise the meetings and workshops required to co-ordinate the strategic planning of research, research training and links to industry. An example of proposed network is HUMAN centred design for Information Society (HUMANIST). If accepted by EC it will be working with IHRA-ITS WG.

One example of an Integrated Project is the EUCAR initiative Integrated Safety

Main context of investigation of this project: driver inattention related to IVIS and ADAS in order to design the human-machine interfaces (HMIs) of these systems so that they comply with the driver's needs and capacities (see schema).

### 6.3 Sweden

- The SafeTE project is continuing to develop subjective and objective measure of driver distraction, cognitive workload and, to a lesser degree, usability. The objective is to develop tools that can assess/ evaluate traffic safety aspects of in-vehicle information and communication systems (IVIS). Advanced driver assistance systems (ADAS) will also be included. Progress has been slower than expected.
- Germany and Sweden, and now Japan, are participating in a joint project to validate different measures of cognitive workload. The objective is also the development of establishing standardised measures which is a part of the IHRA-ITS priority project no. 1.
- A separate presentation by Mr. Kircher has been prepared. The presentation will shed light on the standardised test route used in Sweden and Germany as part of the IHRA-ITS initiated project, as well as presenting some preliminary results from the joint study.
- Using the same design as used above in the German/Swedish project, Sweden will study 'expert' or professional drivers (mainly taxi drivers) in the context of IVIS usage and compare their results to that of low mileage (inexperienced drivers).
- The Swedish ministerial department of industry has launched a new initiative to promote ITS safety systems. This initiative is planned to include research centres, industry and education centres and has a preliminary budget of approx. 30 m€ for a six year period. HMI related research is notably high on the priority list.
- The SNRA has been assigned by the government to head an inquiry into the use of mobile telephones in traffic. We have four main areas that are being studied for the inquiry; rural road study, urban simulator study, mapping phone-usage of private and business road users, literature study. The SNRA will, on the basis of these studies compile a set of recommendations to the government on mobile telephones and even other IT equipment found in vehicles.
- The SNRA formally replied to the EC in respect to the Recommendations on the European Statement of Principles for HMI on the 21<sup>st</sup> December of 2001. The general response from member nations would appear to be relatively poor at this point. A more informed update would be of great interest, as the EC will act differently depending on the general response from member nations.
- Information concerning cell phone research is attached as Annex 14. R.Ceci to provide.
- ISA report will be released at eSafety in Lyon (September) at ISA session, along with other national studies.

### 6.4 Canada

Current research in Canada was outlined.

- TC cell phone study complete and available on Internet ([www.tc.gc.ca](http://www.tc.gc.ca)), including tips for the public.

- TC is preparing a discussion paper summarizing concerns about the risks arising from potential distractions associated with in-vehicle telematics. TC is not satisfied that current efforts by industry will effectively address these concerns. The discussion paper will outline options for federal government intervention and will be seeking industry and public input. The discussion paper will be available in the Fall, 2002.
- Occlusion research continues. There is now some evidence that such techniques may be used to minimize driver distraction. A report is in preparation.
- The study of behavioural adaptation to lane departure warning systems indicates that drivers may place undue trust in the system when its reliability has changed. The report describing both field and simulator results will be distributed. ACC update.
- Canada is a member of the EC project HASTE consortium. The project is well underway and experimental designs for both simulator and field studies are under development. Possible collaboration with US project CAMP has not been possible due to logistical issues.
- TC and NHTSA are collaborating in a joint study comparing manual-based and voice-based interactions using Auto-PC. Analyses of data are underway. Preliminary results will be presented at HFES, October, Baltimore.
- Dr. Peter Burns has been appointed Chief, Ergonomics Division at Transport Canada. He will likely represent Canada on ITS WG in the future.

## **6.5 U.K.**

The U.K. government will be consulting about potentially banning hand-held phones.

ERTICO has set up a group called SpeedAlert to discuss actions to enable development of speed information for drivers. Draft proposals are now being prepared for a FP6 concerning speed alert.

EC Commission is considering plans to develop electronic vehicle identification (VIN) with involvement of UK and NL.

Competing bids for EC Network of Excellence have been submitted to FP6 that may duplicate WG activities.

The EU HLG has revived EU Commission working group on initiative for speed management.

UK FORESIGHT vehicles research is currently asking for bids in the area of interest to this group.

## **6.6 Germany**

Dr. Friedel described the various projects, both internal and external, underway in BASt. There is good collaboration with industry partners. Report transparencies are available in Annex 15.

## **6.7 U.S.A.**

### **6.7.1 Current Light (Passenger) Vehicle Projects**

Rear-End Crash Avoidance Countermeasures



- Problem Definition
  - Naturalistic Driving Study
- Performance Specifications Development
  - NHTSA Algorithm Studies and encoding for real-time
  - Forward Crash Warning and ACC DVI Optimization study on NADS
- Objective Tests of Performance
  - CAMP2 Forward Collision Warning, 6 tasks designed to address remaining issues from CAMP1
- Field Test and Evaluation
  - Field Operational Test of Crash warning/ACC system
  - FOT Independent Evaluation

#### **6.7.2 Lane Change Crash Countermeasures**

- Problem Definition
  - On-Road Rural Lane Change Behavior, naturalistic driving
  - Analysis of Urban Lane Change Database
- Performance Specifications Development
  - Developing plans for NADS Testing of Lane Change Aids
- Objective Tests of Performance

#### **6.7.3 Crossing Path Crash Countermeasures**

- Problem Definition
- Performance Specifications Development
  - New project to address signal and stop sign violation
  - New project to address left-turn across path
  - Continuing work with infrastructure consortium on cooperative systems
- Objective Tests of Performance
- Field Test and Evaluation
  - SAVME Pilot 1 Deployment and Data Analysis,
  - Analyses Supporting Evaluation of Traffic Control Violation Warning,

#### **6.7.4 Road Departure Crash Countermeasures**

- Problem Definition
  - Driver Performance in a Lateral Departure Scenario
  - Naturalistic Road Keeping on Rural Roads
- Performance Specifications Development
  - Vehicle-based road condition sensing, , infra-red look-ahead sensor
  - Vehicle-based road condition sensing, in -tire traction sensing system
- Objective Tests of Performance
  - Objective Tests for Road Departure Countermeasures
- Field Test and Evaluation
  - Field Test of Countermeasures for Road Departure Crashes, UMTRI.
  - Evaluation of the FOT, Volpe.

### 6.7.5 Multiple Crash Types Research

- Enhanced Digital Maps for Safety

### 6.7.6 Safety Impacting Systems Research

- **This problem area occurs when non-safety-promoting original equipment (e.g., the cellular telephone) has a negative impact on safety. There are two varieties of this problem:**
- This problem may be with a single service. In this case, new non-safety-promoting services are examined in the light-vehicle driving context with single services added one at a time. Specific services of concern have been, or are:
  - In-vehicle information systems
  - In-vehicle navigation
  - In-vehicle telephony (cellular telephones)
  - Mobile computing (AutoPC)
- However, this problem may also be with multiple services. This may occur, for example, when several new non-safety-promoting services operate at the same time and a driver becomes confused and distracted. A confounding variation of this is when non-safety equipment reduces the effectiveness of safety promoting crash avoidance equipment (e.g., Will crash warning equipment encourage manufacturers to add more distracting services to cars, thus simply maintaining the *status quo* in crashes?). Again, multiple new services must be examined in the light-vehicle driving context.
- Problem Definition
  - Test Track and On-Road Study of Voice Interface Use
- DVI Development Research
  - In-Vehicle Information Integration Simulator Study
  - In-Vehicle Display Icons
  - Award of SAV-IT project is imminent
- Objective/Subjective Tests
  - Driver Workload Metrics

IVI program brochure was distributed. The following CDs were distributed (for copies contact NHTSA):

- Automotive Collision Avoidance System (ACAS) Field Operational Test
- Development and Validation of Functional Definitions and Evaluation Procedures for Collision Warning/Avoidance Systems.

## 7. Review of Action Plan

The action plan contained in the TOR was reviewed. The two elements that have not advanced appreciably are the compendium and the research database. It was recognized that research is an on-going activity and that an attempt to consolidate such research is overly ambitious in the timeframe available. One possibility is to publish a consolidation of outlines/abstracts of current research in driver workload and distraction. The ultimate objective of this effort would be to identify relevant methods and limits. It is suggested that this item be combined with the survey of research. This would lead to a publication to be released at ESV2003. The document should indicate links of research to priority projects.

I. Noy will be responsible for sending the survey and collecting/consolidating the information. Each WG member should cover government research and endeavour to reflect, to the extent possible, other relevant research within their country. Responses to be received by the end of the calendar year.

## **8. EC Liaison**

Member States were requested to inform the Commission of the steps taken by them within 12 months of publication of the ESoP being published and to provide evaluation results within 24 months. Only 4 (?) Member States have done so (UK, France, Germany, Denmark, and Sweden). DG INFSOC who have responsibility for this file have recently appointed a new person to take this file forward, and one of the first thing they will be doing is writing to those Member States who have not replied, urging them to do so. Of the four that have replied, one stated that it had no comment, another stated that it was preparing a report in co-operation with industry, whilst the remaining two presented proposals for more detail specification of the Principles, including test methods.

A summary of responses may be distributed in July. WG members will endeavour to obtain approval to share final national responses with the WG.

IHRA will react to the EC when they make their position clearer. WRT to eSafety, see 5.1. I. Noy to contact Erki Liikkanen (check coordinates) at EC to enquire about role of IHRA, reminding them about correspondence with Mr. Jaaskelainen.

## **9. UN-ECE WP.29 Liaison**

WG participation in Roundtable 2003. Wp 29 may be more interested in developing regulations for new technologies (e.g., ACC, steer by wire) rather than driver distraction. I. Noy to merge WP29 and TNO PowerePoint files and send to WG members for comments wrt to the Roundtable presentation.

## **10. Strategic Review**

This will be discussed at the next meeting. Strategic review will depends to some extent on relevant developments in WP29 and EC. Need to enhance involvement of industry in WG

## **11. ESV**

ESV2003 will be held in Nagoya, May 19-22, 2003. There is one session on ITS and one on HMI. Auggie Burgett and Annie Pautie to help with the review of papers for the ITS session.

K. Hiramatsu to contact ESV organizers to request meeting facilities May 23, full day.

## **12. Other Business**

None

### **13. Next Meeting**

February 20<sup>th</sup>, 2003 in Lyon at INRETS.

### **14. Action Items – Summary**

- C. Patten to investigate opportunities for and co-ordinate workshop on simulator reference test scenarios (e.g., NADS/Iowa, VTI/Linkoping)
- WG members to consider inviting other partners to join the WG.
- I. Noy to send survey questionnaire to GFP's for completion and submission to BAST. BAST to update database of current and recent research.
- I. Noy to propose to invite EC to develop joint paper (EC and IHRA) for ESV2003. DG IST – Andre Vits (or Valerie Moutal) A. Pauzie to send me coordinates. EC would articulate overview of EOI (expression of interests) and IHRA would emphasize need for harmonized focused research.
- I. Noy to contact D. Augello to clarify potential IHRA role.
- I. Noy to send Auto-PC evaluation paper to Dr. Friedel for HMI session at ESV.
- Other WG members are invited to review/comment on NHTSA papers dealing with surrogate measures (see 5.7 above) and to add to this work with relevant national efforts.
- I. Noy will be responsible for sending the survey and collecting/consolidating the information. Each WG member should cover government research and endeavour to reflect, to the extent possible, other relevant research within their country. Responses to be received by the end of the calendar year.
- WG members to seek approval to share national responses re ESoP with the WG.
- I. Noy to contact Erki Liikkanen (check coordinates) at EC to enquire about role of IHRA, reminding them about correspondence with Mr. Jaaskelainen.
- I. Noy to merge WP29 and TNO Power Point files and send to WG members for comments wrt to the Roundtable presentation. WG members to submit comments by end December.
- I. Noy to discuss intermediate coordination and ITS plans with Mr. Gauvin.
- Auggie Burgett and Annie Pauzie to help review papers for ITS session.
- K. Hiramatsu to contact ESV organizers to request meeting facilities May 23, full day.

## **15. Annex List**

- 1) HMI Research activities in Japan.
- 2) Akamatsu paper on Measuring Driving Behaviour.
- 3) Japanese report on Occlusion Workshop.
- 4) I. Noy's IHRA-ITS summary presentation.
- 5) WP 29 Agenda.
- 6) Kircher's PDT graphs.
- 7) JARI notes on secondary task method.
- 8) NHTSA paper on using driver judgement as a basis for collision avoidance.
- 9) NHTSA paper on rear-end crash prevention
- 10) Summary of Japanese AHS activities.
- 11) Description of Japanese AHS programme.
- 12) JAMA HMI guidelines.
- 13) Report on IHRA relevant activities in France.
- 14) Report on Swedish national activities.
- 15) BAST activities.